material to that of Newsome is taught by the Wilhoit reference. A complete discussion of the Examiner's position regarding the above rejections is found in paper 26.

Newsome discloses a linear low density polyethylene in multiple layer, molecularly oriented films. Newsome further discloses linear low density polyethylene blended with ethylene vinyl acetate copolymers. These blends (linear low density polyethylene and ethylene vinyl acetate copolymers) are also disclosed as being useful in conjunction with a barrier layer wherein ethylene vinyl alcohol copolymer is exemplified as a barrier resin. Newsome, however, discloses a linear low density polyethylene which is chemically and physically distinct from the linear low density polyethylene taught in Applicants' claims. In fact, the linear low density polyethylenes described and taught in Newsome are produced by a process which gives polyethylenes which are vastly different from the polyethylenes produced by the single site catalyst technology described in Lai. The polyethylenes of Newsome have a wide molecular weight range and therefore wide melting point ranges. The polyethylenes of Lai are extremely uniform in composition and molecular weight. Therefore, melting point ranges are quite narrow. Furthermore, Newsome does not teach or suggest that any other linear low density polyethylene could be used, let alone the linear low density polyethylene of Applicants' claims.

Lai, however, discloses a class of linear olefin polymers having certain characteristics and improvements over conventional LLDPE such as the LLDPE taught by Newsome.

Lai further discloses a process of manufacturing said linear olefin polymers. Lai also discloses that these polymers are useful in a variety of areas such as fibers, films and molded parts. There is, however, no teaching or suggestion by Lai in a specific type of film structure (i.e., barrier films, non-barrier film, blended, non-blended film) how these polymers would react or even how they could be useful within the context of any specific film structures. In addition, there is certainly no teaching in Lai or Newsome to combine the teachings to make the claimed invention.

The design of specific film structures involves the consideration of many factors. These factors can be exemplified by, but not limited to, processability of the individual layers or the entire film structure, hot tack, heat sealability, coefficient of friction, etc.

Lai neither teaches nor suggests how any of these factors would be addressed with the use of Lai's polymer within the context of any specific film, structure, or class of film structure, let alone Applicants' specific film structure.

A disclosure of a monolayer film structure comprising solely the polymer of Lai does not address the factors discussed above. Because these factors change with the introduction of another resin (i.e., ethylene vinyl acetate copolymer) or with the introduction of a barrier layer (ethylene vinyl alcohol copolymer) in a film structure, there is no way of predicting whether the film structure having more than one component will be viable based on the knowledge derived from the Lai disclosure.

"Polymers and copolymers made by polymerization with a single site or metallocene catalysts are often known as homogeneous polymers because they have very homogeneous structures and narrow molecular weight distributions. On the other hand, polymers such as linear low density polyethylene (LLDPE) made with Ziegler-Natta (ZN) catalysts have non-uniform or heterogeneous structures and broader molecular weight distributions. This causes significant differences between the thermal, physical and processing properties of the two types of materials.

For example, homogeneous polymers made with single site catalysts (SSC) have lower melting points and are stronger and tougher than comparable polymers made with ZN catalysts. This makes the SSC materials ideally suited for use in film applications requiring high strength and strong heat seals. However, the homogeneous nature and the narrow molecular weight distribution of the SSC materials makes them more difficult to process by melt extrusion during multilayer film manufacturing and film orientation by the double bubble process.

In pursuing this invention the inventors had to determine by experimentation that the materials with a molecular weight distribution (Mw/Mn) of 2.5 were processable for the current intended use. It was determined that materials with the claimed I_{10}/I_2 ratio could be successfully extruded and formed into the claimed film structure.

During the double bubble orientation process, SSC materials with narrow molecular weight distributions are difficult to draw down to obtain the desired level of orientation and free shrink. The material can fracture and the bubble will break to stop the process during orientation. Again, the inventors were required to determine by experimentation that the claimed film structures made with the claimed materials were, in fact orientable in the double bubble process employed to manufacture the film."

Therefore, it is Applicants' position that the design of a viable film structure involves the consideration of many factors as indicated above. Without experimentation, there would be no

way of predicting how any of the various factors, either singularly or in combination, could be affected by a change in a component of the film structure (i.e., substituting one LLDPE for another LLDPE). Therefore, given the chemical and physical differences between the LLDPE in Newsome and the LLDPE of Applicants' film structure, the lack of teaching or suggestion in Lai as to how its polymer would affect the various considerations discussed earlier for specific film structures or even in a class of specific film structure (i.e., barrier film, blended films, etc.) and the unpredictability as to the effect of altering the components of a specific film structure, it is not seen how these references either singularly or in combination can obviate claims 17, 18, 20 and 21.

Wilhoit discloses a heat-shrinkable film comprising a three component blend wherein said blend comprises a polyethylene member selected from the group consisting of VLDPE and LLDPE or a mixture thereof, ethylene alpha-olefin plastomer copolymer of density below 0.90 g/cm^3, and ethylene vinyl acetate copolymer. Therefore, in Wilhoit, whether the film is a monolayer or a multilayer, at least one layer must comprise the above-described blend.

Applicants' invention is to a five-layer film structure comprising a first-barrier layer, a second and third adhesive layer disposed on opposing surfaces of said first layer, a fourth layer of ethylene vinyl acetate copolymer, and a fifth layer of an ethylene alpha-olefin copolymer formed by a single site catalyst process. Applicants' film structure is totally distinct from the teaching of Wilhoit because no such blend is present in Applicants' invention. Wilhoit's teaching of irradiating a film comprising the above-described blend does not make obvious irradiation of Applicants' film structure because Applicants film structure is distinct from that taught by Wilhoit. One can not predict that the irradiation of a given film structure will be successful based on the irradiation of a totally different structure.

Claims 17, 18, 20 and 21 are rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over Newsome (4,457,960) in view of Schut "Enter a New Generation of Polyolefins" Nov. 1991, Plastics Technology, or Van der Sanden "A New Family of Linear Ethylene Polymers With Enhanced Sealing Performance" February 1992, and further in view of Wilhoit (5,283,128).

The Newsome and Wilhoit references have been discussed above.

The Schut reference discloses polyethylenes made using different single-site catalysts. The Schut reference further discloses that these polyethylenes, depending on the process and

single-site catalyst used can produce, polyethylenes having usefulness in many different applications. The Schut reference does not teach or suggest Applicants' multilayer, irradiated film having the Applicants' particular configuration.

The Van der Sanden reference discloses linear ethylene polymer having lower seal initiation temperatures, toughness and strength. There is no disclosures in Van der Sanden of the flow rate ratio of the single site catalyst polymers, nor of any favorable results that arise from the use of ethylene alpha-olefin copolymers formed from a polymerization reaction in the presence of a single-site catalyst having range of molecular weight distribution and flow rate ratio contained in the amended claims. Additionally, while Van der Sanden teaches the favorable property of narrow molecular weight distribution, it does not teach the particular range recited in the amended claims or the use of the ethylene alpha-olefin copolymer in Applicants particular film structure.

Applicants would also like to state the following regarding the rejections. The Examiner has provided a number of references that disclose various aspects of film technology – disclosures of Wilhoit, Schut, Van der Sander and Lai – and a prior art film structure disclosure of Newsome. The Examiner, however, has not provided any reference which would suggest the modification or the desirability of the modification suggested by the Examiner. Given the numerous factors which must be considered in the formulation of any given film structure, the unpredictability of combining these factors and the chemical and physical differences between the polyethylene of Newsome and the ethylene alpha olefin of the present invention, it is not seen how these references taken singly or in combination for the reasons presented above make obvious the present invention.

Claims 17, 18, 20 and 21 are provisionally rejected by the Examiner under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4-13, 15, 16 and 21 of copending Application No. 08/899,410.

With respect to the rejection of claims 17, 18, 20 and 21 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4-13, 15, 16 and 21 of copending Application no. 08/899,410, Applicants would be willing to consider submitting a Terminal Disclaimer to overcome this rejection after the remaining rejections have been withdrawn and upon receiving an indication of allowable subject matter.

In view of the foregoing remarks and amendments, Applicants respectfully submit that all of the claims in the application are in allowable form and that the application is now in condition for allowance.

Respectfully submitted,

Date: March 31, 2003

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